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Research Memorandum 68-2

STUDY OF SCORE DISTRIBUTIONS FOR
ARMY CLERICAL SPEED TEST IN REVISED FORMAT

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⑨ Research Memorandum 68-2

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ARMY CLERICAL SPEED TEST IN REVISED FORMAT

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STUDY OF SCORE DISTRIBUTIONS FOR
ARMY CLERICAL SPEED TEST IN REVISED FORMAT

BACKGROUND

The Army Clerical Speed Test of the Army Classification Battery was revised in the spring of 1966 to make it scorable on the Digitek Optical Scanner. ¹ In the revised forms, called ACS-5A and ACS-6A, the response format of the Number Reversal part of the test (Part I) was changed by making the response boxes vertical instead of horizontal; to record his response, the individual makes a vertical line in the new form rather than a horizontal line as in the original format. The items remained identical, and the sequence remained unaltered. Since the test is highly speeded, there was a question whether the mechanics of responding would affect the scores. ¹ p. 5

The Coding part of the test (Part II) remained unchanged except for a rearrangement of the items. Since the coding items do not differ in difficulty, no change in the scores was expected and any changes of scores in the Coding part can be used as a base to interpret changes in the Number Reversal part.

Another change in the revised format was to add a third sheet of instructions. In taking the test, examinees must turn the booklet several times. In the previous form, the instructions for both parts were on a single sheet, and following the directions was relatively simple. With the addition of the third sheet, some confusion in following the directions may have been created for some examinees, with possible adverse effect on the scores.

Rather than relying on a single test of significance to determine whether the score distributions for the two forms are comparable, the results for several samples will be examined for consistency. If the new form is consistently different from the old one, then restrandardization is warranted; if no consistent pattern of differences is observed and the overall means and sigmas are similar, then the existing norms will be used for the new forms.

¹ The commercial term is given only for precision in stating the problem. Use of the trade name does not constitute endorsement by the Army or by BEASRL.

METHOD

ACS answer sheets were collected from Reception Stations, which were requested to send in the sheets for the last week of input that took the old forms of the test, ACS-3B and ACS-4B, and the sheets for first week of input that took the new forms of the test, ACS-5A and ACS-6A. About 6,000 usable answer sheets were received from seven installations which sent in the sheets. The number of answer sheets for each installation is shown in Table 1.

The mean and standard deviation of each part of each form were computed for each installation and for the total sample. In addition, the percentile ranks for each part of each form were computed for the total sample.

Table 1
NUMBER OF ARMY CLERICAL SPEED ANSWER SHEETS IN THE SAMPLE

| ACS Form | INSTALLATION | | | | | | | | Total |
|-------------|--------------|--------------|-------------|---------------|--------------|-----------------|------------------|--|-------|
| | Fort Dix | Fort Polk | Fort Ord | Fort Bragg | Fort Knox | Fort Benning | Fort Campbell | | |
| 3B | 39 | 107 | 174 | 86 | 503 | 468 | 208 | | 1585 |
| 5A | 78 | 333 | 135 | 100 | 431 | 260 | 268 | | 1605 |
| 4B | 44 | 185 | 67 | 116 | 390 | 380 | 202 | | 1384 |
| 6A | 48 | 70 | 141 | 90 | 517 | 478 | 187 | | 1531 |

RESULTS

Means and standard deviations of the parts for each installation and for the total sample are shown in Table 2. The corresponding parts of the old and new forms are shown in adjacent rows; thus the results for 3B and 5A Number Reversal are shown together because the items are identical differing only in the mechanics of responding. The means and standard deviations are shown for the raw scores rather than Army Standard Scores. The means of the parts showed considerable variation, both within and across installations. No consistent pattern of changes in scores between the old and new forms emerged from the data either in means or standard deviations.

Table 2
MEANS AND STANDARD DEVIATIONS OF THE ARMY CLERICAL SPEED TEST

| ACS Form | Mean | | | | | | Standard Deviation | | | | | | | | | |
|------------------------|-------------|--------------|-------------|---------------|--------------|-----------------|--------------------|-------------|--------------|-------------|---------------|--------------|-----------------|------------------------|-------------|-----|
| | Fort Dix | Fort Polk | Fort Ord | Fort Bragg | Fort Knox | Fort Benning | Fort Campbell | Fort Dix | Fort Polk | Fort Ord | Fort Bragg | Fort Knox | Fort Benning | Fort Campbell | Fort Dix | |
| <u>Number Reversal</u> | | | | | | | | | | | | | | <u>Number Reversal</u> | | |
| 3B | 30.5 | 23.8 | 25.7 | 27.0 | 31.6 | 27.6 | 27.9 | 28.5 | 9.1 | 8.4 | 8.7 | 8.7 | 8.6 | 7.8 | 9.0 | |
| 5A | 28.7 | 28.9 | 25.6 | 27.9 | 31.7 | 31.1 | 30.5 | 29.9 | 9.3 | 8.9 | 9.0 | 10.0 | 7.4 | 9.6 | 8.7 | 8.9 |
| 4B | 29.1 | 28.9 | 27.3 | 22.6 | 28.9 | 28.2 | 28.3 | 28.0 | 8.6 | 9.0 | 5.7 | 8.6 | 7.9 | 7.8 | 9.5 | 8.5 |
| 6A | 28.3 | 30.5 | 24.9 | 24.0 | 29.8 | 27.5 | 28.6 | 28.1 | 8.7 | 6.9 | 7.7 | 10.8 | 7.7 | 7.7 | 10.3 | 8.5 |
| <u>Coding</u> | | | | | | | | | | | | | | <u>Coding</u> | | |
| 3B | 31.5 | 26.4 | 24.1 | 26.5 | 28.4 | 26.1 | 30.6 | 27.5 | 7.5 | 10.0 | 8.6 | 8.2 | 8.4 | 8.1 | 9.1 | 6.9 |
| 5A | 27.9 | 26.2 | 24.2 | 25.5 | 27.9 | 27.6 | 30.2 | 27.3 | 8.6 | 8.8 | 8.3 | 9.3 | 8.3 | 9.0 | 10.3 | 9.1 |
| 4B | 28.8 | 27.2 | 26.4 | 20.7 | 27.6 | 28.4 | 24.0 | 26.6 | 6.9 | 9.4 | 8.8 | 8.3 | 9.1 | 9.1 | 8.8 | 9.3 |
| 6A | 28.5 | 31.0 | 25.7 | 25.1 | 28.5 | 26.8 | 30.2 | 27.8 | 10.1 | 8.4 | 8.4 | 9.6 | 8.5 | 8.8 | 10.9 | 9.1 |

Table 3
PERCENTILE SCORES FOR THE ARMY CLERICAL SPEED TEST

| Raw Score | Percentile Score* | | | | | | | |
|-----------|------------------------------|-----|-----|-----|---------------------|-----|-----|-----|
| | Number Reversal ^b | | | | Coding ^b | | | |
| | ACS Form | | | | ACS Form | | | |
| 3B | 5A | 4B | 6A | 3B | 5A | 4B | 6A | |
| 5 | 2 | 1 | 2 | 2 | 1 | 2 | 3 | 2 |
| 10 | 3 | 3 | 4 | 3 | 3 | 3 | 6 | 3 |
| 15 | 8 | 6 | 8 | 7 | 8 | 9 | 12 | 9 |
| 20 | 19 | 14 | 18 | 16 | 21 | 23 | 25 | 20 |
| 25 | 35 | 29 | 38 | 37 | 43 | 46 | 47 | 42 |
| 30 | 60 | 54 | 65 | 64 | 66 | 67 | 71 | 63 |
| 35 | 80 | 76 | 83 | 82 | 83 | 82 | 85 | 81 |
| 40 | 93 | 90 | 94 | 95 | 92 | 93 | 94 | 91 |
| 45 | 98 | 96 | 98 | 98 | 98 | 97 | 98 | 98 |
| 50 | 100 | 98 | 100 | 100 | 100 | 101 | 101 | 100 |
| 55 | 100 | 100 | 101 | 100 | - | - | - | - |
| 60 | 101 | 100 | 101 | 100 | - | - | - | - |

*The percentile scores are based on the total sample.

^bPart I, Number Reversal has 60 items; Part II, Coding 50 items.

The means for the total sample also showed some differences, but again no pattern emerged. The mean for Number Reversal form 5A was 1.4 points higher than the mean for form 3B, but the mean for 6A was only 0.1 point higher than for 4B. For the Coding part, where no differences were expected, a similar type of result obtained. The mean for 6A was 1.2 points higher than for 4B, but the mean for 5A was only 0.2 points higher than for 3B. Means for the combination of Number Reversal and Coding were as follows: 3B - 56.0; 5A - 57.2; 4B - 54.6; and 6A - 55.9. The corresponding Army Standard Scores are 115, 116, 113, and 115, respectively. The sample means were relatively high because Category IV personnel, who had taken the AQB at the AFEEs, were not included. In terms of raw scores, an individual would appear to do slightly better on the revised forms; but in terms of Army Standard Scores, there is virtually no difference.

The lack of a consistent pattern may have arisen in part from the short time span in which the answer sheets were collected. Answer sheets for each form may have been collected during only one or two sessions. Since the test is highly speeded, small inaccuracies in timing for a session can have a noticeable effect on the scores. In addition, the quality of input varies from day to day and week to week; and this variation may also have affected the scores. No measure of general ability was obtained on this sample and therefore no statistical control on quality of input could be exercised. The small differences for the total sample assume even less practical significance in light of the fluctuations that can be expected across time. As further evidence on the comparability of the forms, percentile scores were computed for each part of each form for the total sample (Table 3). The percentile scores also showed no large consistent differences between the forms.

CONCLUSION

Because of the similar score distributions found for the old and new ACS forms, no revision of the norms is required for the 5A and 6A forms. The decision was made to introduce the revised forms operationally, and to use the norms that were published for the 3B and 4B forms.